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Laparoscopic Retrieval of Migrated LAMS Unable To Remove Endoscopically

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Abstract

Background: We present a case series of laparoscopic retrieval of migrated lumen apposing metallic stent(LAMS) placed for drainage of peripancreatic collection when their removal was not possible via the standard endoscopic route.

Methods: We conducted a retrospective cohort study in 8 patients of both sexes of adult age group admitted with migrated stent. Demographic data, clinical examination and all relevant investigations were carried out after which the patient was planned for the operative procedure. Regular follow up of patients were done on OPD basis to check for complications or recurrence of collection.

Results: Eight patients including 6 males and 2 females of adult age group 18-60yr were included in this study. The most common reason for stent placement was pseudo pancreatic cyst in 5 followed by Walled off necrosis(WON) in 2 cases. The average operative time was 45.4 minutes and there was negligible blood loss. The post operative recovery was smooth and there were no perioperative complications. All the patients were discharged on postoperative day 2 and no mortality was seen in the study and 6 week postoperative follow up period revealed no complications.

Conclusions: We conclude that with adequate laparoscopic expertise and proper management we can successfully retrieve even a lost stent with minimal

invasive technique, removal of which was not possible endoscopically, thus preventing the need of laparotomy and giving overall better outcome for the patient.

Keywords: Stents, laparoscopy, necrosis, Pancreatic cyst, drainage

Introduction

Pancreatic pseudocyst is a well-defined encapsulated collection of fluid surrounded by a granulomatous non epithelised inflammatory wall with minimal necrosis. It is a common complication seen in both acute and chronic pancreatitis in about 10% of patients after 4 weeks of onset and represent about 20% of cystic lesions of pancreas.[1][2]

This is associated with complications in about 41% of cases like rupture, abscess formation, obstruction and haemorrhage if left untreated[3] .They need active intervention if symptomatic and/or persists more than 6 weeks[4][5] by surgical or minimal invasive drainage techniques like percutaneous image guided transmural drainage or endoscopic ultrasound guided drainage (EUS-GD) in which a communication is created between the cyst and stomach or small intestine[6][7]

However these procedures are associated with many complications like bleeding, perforation, migration and occlusion with subsequent infection [8] .However stent displacement is a rare phenomenon but is seen in about 4% of cases.[9]

Double-J plastic stents have a narrow luminal diameter(7-10 French) and are more prone to occlusion and infections.[10] while metallic stents have a higher tendency of migration due to a tubular shape, leakage and mucosal injury due to more length.[11]

Lumen apposing metal stents (LAMS) has a dumbbell shape with broad anchoring flanges, shorter length(1cm) and wider inner diameter.[12][13][14] This provides better drainage of solid and semisolid debris, drainage and debridement of walled off pancreatic necrosis (WOPN) and endoscopic necrosectomy and has a lesser chance of migration with high clinical success rate and fewer complications.[15-17]

These stents are generally removed after 6 weeks via endoscopic route and failure to retrieve it requires surgical intervention. We present a case series of laparoscopic retrieval of migrated in the lesser sac which was not extractable via endoscopic route.

Material and Methods

This retrospective observational study was conducted on 8 patients including 6 males and 2 female of adult age group between January 2023–December 2023 in the Department of General Surgery of a tertiary care centre after taking approval from ethical committee.

The patients had undergone a drainage procedure for pancreatic pseudocyst or peripancreatic collection earlier and now presented with some complications or were referred from the gastroenterology department in view of failure to retrieve the stent via endoscopic route.

After collecting the demographic data, clinical features, physical examination and co-morbidities, and giving conservative management with iv antibiotics and analgesics.

All the patients were planned for an Upper GI endoscopy to retrieve the stent endoscopically if possible and a CECT whole abdomen to find out any residual peripancreatic collection or cavity and to identify the location of migrated stent.

When the stent could not be retrieved endoscopically and the location of migrated stent was confirmed, the patients were planned for laparoscopic removal of the

stent after a complete preoperative workup including a complete blood count, biochemistry and viral markers.

Operative procedure

Under general anaesthesia, the patient was placed in supine position. One 10mm laparoscopic port was introduced supraumbilical and two 5mm ports were placed on either side in the mid-clavicular line just above the level of umbilicus. Diagnostic laparoscopy was performed, which showed no obvious visible or palpable mass. Upon exploration of the lesser sac, identification of a densely adherent area was done extending from the pylorus to the pancreatic head. Gentle and snugly dissection was performed after which a small structure in form of meshed wire was identified which was found to be the migrated stent and after gentle dissection the LAMS was freed from the adhesions and extracted out via the supraumbilical port. An abdominal drain was placed in the lesser sac on the pancreatic surface to asses any post operative bleeding or collection. (Figure 1)

During the postoperative period the patient was kept under close observation and was discharged as per unit protocol. Peripancreatic collection was assessed via USG whole abdomen after 2 weeks of operative procedure and regular follow up was done on OPD basis till 6 weeks.

Statistical analysis of data was done and represented in form of proper tables and charts.

Figure 1 : Figure demonstrating intraoperative image of retrieving the stent and image of stent after retrieval

Results

Eight patients were included in the study 6 (75%) male and 2 (25%) female, all the patients were of adult age group with the median age being 40.12 years (range 18-60) as indicated by Table 1.

The various aetiologies of pancreatitis are shown in Table1, the most common of which was alcohol induced in 4 (50%) followed by gall stones in 3 cases (37.5%).

The various presentations of patient are as in mentioned Table 1 revealed that 5 patients (62.5%) were asymptomatic and unaware of the stent displacement, 2 patients (25%) had an upper abdominal pain and 1 patient (12.5%) presented with nausea and vomiting.

The patients who were asymptomatic were referred from the department of gastroenterology after their failure of retrieving the stent via an endoscopic route .

On review of investigations all the patients were found to have a normal hemogram including haemoglobin, TLC and platelet counts. 6 (75%) of the patients had normal liver functions and 2 cases (25%) had raised amylase and lipase levels. Xray erect abdomen revealed displaced stent and definitive location was established with help of CT scan . (Figure 2)

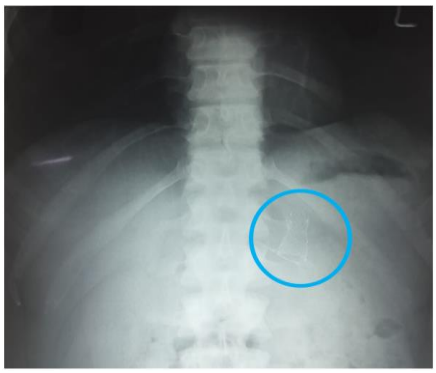
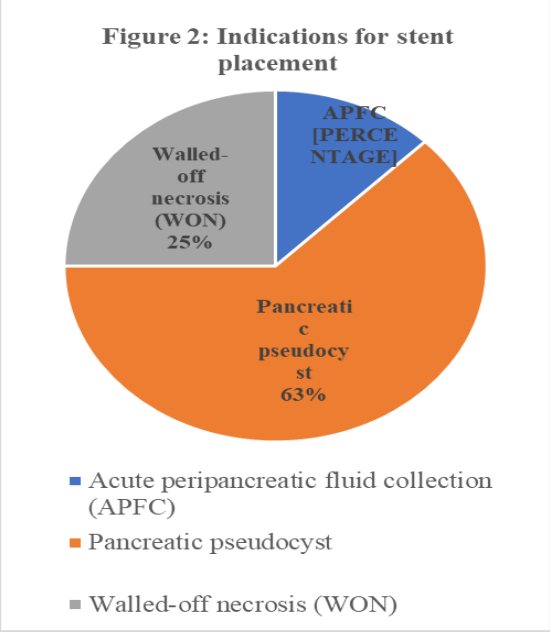


Figure 2: An erect Xray image of the patient demonstrating the migrated stent

Table 1: Patient characteristics

	Number of patients (n=8)	**Percentage (%)**
Gender		
Male	6	75%
Female	2	25%
Age(years)	Mean- 40.12 yrs.	
<15	0	0
15-30	1	12.5%
31-45	5	62.5%
46-60	2	25%
61-75	0	0
Aetiology of pancreatitis		
Alcoholic	4	50%
Gall stones induced	3	37.5%
Idiopathic	1	12.5%
Traumatic	0	0
Viral/Drug induced	0	0
Presentation of patient		
Asymptomatic	5	62.5%
Pain abdomen	2	25%
Vomiting	1	12.5%



Graph 1: Indications for stent placement

Figure 3: Post operative status of patient of discharge

The various indications of stent placement are mentioned in Graph 1 maximum of which was found

to be pseudo pancreatic cyst in 5 cases (62.5%) followed by Walled off necrosis in 2 cases (25%).

Table 2: Operative characteristics

	Number of patients (n=8)	Percentage (%)
Surgery		
Laparoscopic procedure	8	100%
Converted to open procedure	0	0

Among the patients as shown in Table 2, all the 8 patients (100%) were operated laparoscopically with no conversion to open procedure.

The average operative time was 46.2 minutes (35-57 min) and the average blood loss was less than 50 ml. All the patients were allowed orally starting from post operative day 0 and all patients discharged between postoperative day 3-5(Figure 3)

There were no complications seen in the perioperative period and regular follow up till date revealed no complications.

Discussion

Pancreatic pseudocyst is the collection of fluid in the peripancreatic region enclosed within a fibrous wall or non-epithelised granulation tissue due to pancreatitis by primary or secondary causes.[18-20]

Nowadays, endoscopic guided stent placement and drainage techniques being minimal invasive, cost effective, with shorter hospital stay and lower overall mortality is the treatment of choice and has replaced the traditional surgical and percutaneous approach.[21-23]

Plastic and metallic stents are commonly used for transmural drainage of pancreatic pseudocyst but they should not be removed till complete resolution or at least till 2 months of placement to prevent recurrence and decrease failure rates.[24-25]

Placement of these stents are associated with many complications like haemorrhage, infection and stent blockage majority of which are managed conservatively.[21][26]

Stent dislodgement and spontaneous migration occur in approximately 15% of the cases.[27,28] Migration of these stents can cause distal bowel obstruction and perforation thus needing surgical intervention.[29-30]

To prevent this nowadays fully covered self-expandable metallic stents with antimigration system are introduced like LAMS which has broad anchoring flanges, dumbbell shape, short length(1cm) and has a migration rate of approximately 19%.[31-33] In another study, Sharaiha et al has stated the rate of LAMS migration being 5.6%.[34]

Most of the displaced stent can be retrieved endoscopically but for extra-luminal loss, laparoscopic retrieval is the appropriate treatment of choice however final decision depends upon the patient characteristics and the surgeon's experience.

Conclusion

In this study we conclude that with proper laparoscopic expertise and surgical skill we can safely retrieve a migrated LAMS, removal of which was not possible via standard endoscopic approach. This prevents the need of open surgical technique and laparotomy given the patient advantages of minimally invasive surgery and overall better outcome.

References

1. Yeo LJ, Sarr MG. Cystic and pseudocystic diseases of the pancreas. Ann Probl Surg 1994; 31:165-243. PMID: 8168359

2. Banks PA, Bollen TL, Dervenis C, et al. Classification of acute pancreatitis--2012: revision of the Atlanta classification and definitions by international consensus. Gut 2013; 62:102- 11. PMID: 23100216
3. Bradley EL, Clements JL Jr, Gonzalez AC. The natural history of pancreatic pseudocysts: a unified concept of management. Am J Surg 1979; 137:135-41. PMID: 758840
4. Samuelson AL, Shah RJ. Endoscopic management of pancreatic pseudocysts. *Gastroenterol Clin North Am* 2012; 41: 47-62 [PMID: 22341249 DOI: 10.1016/ j.gtc. 2011.12.007]
5. Bradley EL, Clements JL, Gonzalez AC. The natural history of pancreatic pseudocysts: a unified concept of management. *Am J Surg* 1979; 137: 135-141 [PMID: 758840]
6. Seewald S, Ang TL, Kida M, Teng KY, Soehendra N. EUS 2008 Working Group document:evaluation of EUS-guided drainage of pancreatic-fluid collections (with video). Gastrointest Endosc. 2009;69:S13-S21.
7. Seewald S, Ang TL, Teng KY, Groth S, Zhong Y, Richter H, et al. Endoscopic ultrasound-guided drainage of abdominal abscesses and infected necrosis. Endoscopy. 2009;41:166-74.
8. Varadarajulu S, Christein JD, Wilcox CM. Frequency of complications during EUS-guided drainage of pancreatic fluid collections in 148 consecutive patients. J Gastroenterol Hepatol 2011; 26:1504-8. PMID: 21575060
9. Fabbri C, Luigiano C, Cennamo V, Polifemo AM, Barresi L, Jovine E, Traina M, D'Imperio N, Tarantino I. Endoscopic ultrasound-guided transmural drainage of infected pancreatic fluid collections with placement of covered self-expanding metal stents: a case series. *Endoscopy* 2012; 44: 429-433 [PMID: 22382852 DOI: 10.1055/s-00311291624]
10. Patil R, Ona MA, Papafragkakis C, Anand S, Duddempudi S. Endoscopic ultrasound-guided placement of AXIOS stent for drainage of pancreatic fluid collections. *Ann Gastroenterol* 2016; 29:168–173
11. Weilert F, Binmoeller KF. Specially designed stents for translumenal drainage. *Gastrointest Interv* 2015; 4:40–45
12. Sharaiha RZ, Tyberg A, Khashab MA, Kumta NA, Karia K. Endoscopic Therapy With Lumen-apposing Metal Stents Is Safe and Effective for Patients With Pancreatic Walled-off Necrosis. Clin Gastroenterol Hepatol. 2016;14(12):1797-803.
13. Shah RJ, Shah JN, Waxman I, Kowalski TE4, Sanchez-Yague A, Nieto J, et al. Safety and Efficacy of Endoscopic Ultrasound-Guided Drainage of Pancreatic Fluid Collections With Lumen- Apposing Covered Self-Expanding Metal Stents. Clin Gastroenterol Hepatol. 2015;13 (4):747-
14. Siddiqui AA, Adler DG, Nieto J, Shah JN, Binmoeller KF, Kane S, et al. EUS-guided drainage of peripancreatic fluid collections and necrosis by using a novel lumen-apposing stent:a large retrospective, multicenter U.S. experience (with videos). Gastrointest Endosc. 2016;83(4):699-707.
15. Siddiqui AA, Kowalski TE, Loren DE, Khalid A, Soomro A, Mazhar SM, et al. Fully Covered Self-

Expanding Metal Stents Versus Lumen-Apposing Fully Covered Self-Expanding Metal Stent Versus Plastic Stents for Endoscopic Drainage of Pancreatic Walled-off Necrosis: Clinical Outcomes and Success, Gastrointestinal Endosc. 2017;85(4):758- 65.

16. Goldman IA, Yang J, Scheinfeld MH. Imaging of Lumen-Apposing Metal Stents in Abdominopelvic Applications. AJR. 2019; 213: 602-9.
17. Kumta NA, Tybergb A, Bhagatb VH, Siddiquic AA, Kowalski TE, Loren DE, et al. EUS-guided drainage of pancreatic fluid collections using lumen apposing metal stents:An international, multicenter experience. Dig Liver Dis. 2019.
18. Jacobson BC, Baron TH, Adler DG, Davila RE, Egan J, Hirota WK, et al. ASGE guideline: The role of endoscopy in the diagnosis and the management of cystic lesions and inflammatory fluid collections of the pancreas. Gastrointest Endosc. 2005;61:363- 70.
19. Habashi S, Draganov PV. Pancreatic pseudocyst. World J Gastroenterol. 2009;15:38-47.
20. Bradley EL. A clinically based classification system for acute pancreatitis. Summary of the International Symposium on Acute Pancreatitis, Atlanta, Ga, September 11 through 13, 1992. Arch Surg. 1993;128:586-90.
21. Dumonceau JM, Macias-Gomez C. Endoscopic management of complications of chronic pancreatitis. World J Gastroenterol. 2013;19: 7308- 15.
22. Kato S, Katanuma A, Maguchi H, Takahashi K, Osanai M, Yane K, et al. Efficacy, safety, and long- term follow-up results of EUS-guided transmural drainage for pancreatic pseudocyst. Diagn Ther Endosc. 2013;2013:924291.
23. Fabbri C, Luigiano C, Maimone A, Polifemo AM, Tarantino I, Cennamo V. Endoscopic ultrasound-guided drainage of pancreatic fluid collections. World J Gastrointest Endosc. 2012;4:479-88.
24. Cahen D, Rauws E, Fockens P, Weverling G, Huibregtse K, Bruno M. Endoscopic drainage of pancreatic pseudocysts: long-term outcome and procedural factors associated with safe and successful treatment. Endoscopy. 2005;37:977-83.
25. Arvanitakis M, Delhaye M, Bali MA, Matos C, De Maertelaer V, Le Moine O, et al. Pancreatic-fluid collections:a randomized controlled trial regarding stent removal after endoscopic transmural drainage. Gastrointest Endosc. 2007;65:609-19.
26. Patrzyk M, Dierzek P, Glitsch A, Paul H, Heidecke CD. Retrieval of a self-expanding metal stent after migration and incorporation in the omental bursa, using a gastroscopic-transgastric laparoscopic rendezvous technique. J Minim Access Surg. 2015;11(3):207-9.
27. Penn DE, Draganov PV, Wagh MS, Forsmark CE, Gupte AR, Chauhan SS. Prospective evaluation of the use of fully covered self-expanding metal stents for EUS-guided transmural drainage of pancreatic pseudocysts. Gastrointest Endosc. 2012;76:679-84.
28. Varadarajulu S, Wilcox CM. Endoscopic placement of permanent indwelling transmural stents in disconnected pancreatic duct syndrome:does benefit outweigh the risks? Gastrointest Endosc. 2011;74:1408-12.

29. Chandran S, Efthymiou M, Kaffes A, Chen JW, Kwan V, Murray M, et al. Management of pancreatic collections with a novel endoscopically placed fully covered self-expandable metal stent: a national experience. Gastrointest Endosc. 2015;81:127-35.
30. Razzak A, Larsen M, Irani S, Gan SI, Ross A. Small-bowel obstruction due to a migrated lumen-apposing metal stent. Gastrointest Endosc 2016;84:867-69.
31. Téllez-Ávila FI, Villalobos-Garita A, Ramírez-Luna MÁ. Use of a novel covered self-expandable metal stent with an anti-migration system for endoscopic ultrasound-guided drainage of a pseudocyst. World J Gastrointest Endosc. 2013;5:297-9.
32. Mukai S, Itoi T, Baron TH, Sofuni A, Itokawa F, Kurihara T, et al. Endoscopic ultrasound-guided placement of plastic vs. biflanged metal stents for therapy of walled-off necrosis:a retrospective single-center series. Endoscopy. 2015;47:47-55.
33. Chandran S, Efthymiou M, Kaffes A, Chen JW, Kwan V, Murray M, et al. Management of pancreatic collections with a novel endoscopically placed fully covered self-expandable metal stent: a national experience. Gastrointest Endosc. 2015;81:127-35.
34. Sharaiha RZ, Tyberg A, Khashab MA, Kumta NA, Karia K. Endoscopic Therapy With Lumen-apposing Metal Stents Is Safe and Effective for Patients With Pancreatic Walled-off Necrosis. Clin Gastroenterol Hepatol. 2016;14(12):1797-803.